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ON THE EXTERMINATION OF THE RABBIT IN AUSTRALASIA.

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NEARLY ten years ago, I visited, for the first time, the Canadian North-West, when I had my attention drawn to a very curious phenomenon connected with the life-history of the common Rabbit of that country, *Lepus americanus*. This animal periodically undergoes most astonishing variations in its numbers. For three or four years together, it may be quite a rare and uncommon species, only met with now and then, even if careful search be made for it. During the following three or four years, however, it increases in number to such an extraordinary extent as to become by far the most abundant mammal in the country. Then, after the maximum of increase has been reached, the Rabbits suddenly commence to die off, and for a short time continue to do so, literally by millions. Before many weeks are over, their dead bodies strew the woods in all directions, while a live Rabbit is scarcely to be met with anywhere. This remarkable phenomenon is periodically observable over the greater part, if not the whole, of the vast Canadian North-West.

When my attention was first drawn to this curious fact in Natural History, the idea at once occurred to me that it might be turned to valuable account as a means of combating the rabbit-pest in the Australasian Colonies; but it was not until public interest was aroused by M. Pasteur's proposal to exterminate the rabbits there by fowl-cholera, that I considered the



subject in earnest. The matter is now rendered of still greater interest and importance through the publication of Prof. Löffler's highly-valuable observations on the bacillus of what he calls "mouse-typhus," by means of which he was enabled to put an end, with astonishing success, to a plague of *Voles* (*Arvicola savii*?) which was devastating Thessaly in the spring of the present year.*

That the almost complete periodic extermination of the Rabbits in the Canadian North-West is due to some virulently-infectious epidemic disease which develops itself periodically, there seems no reasonable room to doubt. There is equally little doubt that careful study would reveal the bacillus or germ of this disease, and that this bacillus would be capable of being transported to Australia, and of being successfully communicated to the rabbits there, when it is probable that results would follow precisely similar to those now commonly observed in Canada.

It is true the American rabbit is not identical with the common English rabbit, *Lepus cuniculus*, which is the too abundant rabbit of Australasia; but the two species are so nearly identical that it is probable that a disease which kills one would be equally fatal to the other, especially as evidence quoted hereafter shows that at least four other species of American rabbit are periodically exterminated by the same, or a similar, epidemic.

This almost complete periodical disappearance of the rabbits in North-West Canada has by no means been overlooked by scientific observers who have travelled through the country. The earliest traveller who makes any reference to the matter is Sir John Richardson, who, in his 'Fauna Boreali-Americana' (London, 1829-37, p. 217), says of *Lepus americanus*:—

"This is a common animal in the wooded districts of North America, from one extremity of the continent to the other. It abounds on Mackenzie's River, as high as the 68th parallel of latitude. . . . It has numerous enemies, such as wolves, foxes, wolverines, martens, ermines, snow owls, and various hawks; but the Canada Lynx is the animal which perhaps

* For a translation of the Professor's remarks, see 'The Zoologist' for 1892, pp. 297-328. In justice to myself, I may explain that the whole of this article (with the exception of a few remarks I have now added near the end) was written years before the appearance of Prof. Löffler's observations.

most exclusively feeds upon it. It has been remarked that lynxes are numerous only when there are plenty of hares in the neighbourhood. At some periods a sort of epidemic has destroyed vast numbers of hares in particular districts, and they have not recruited again until after the lapse of several years, during which the lynxes were likewise scarce."

Prof. H. Y. Hind, in his 'Narrative of the Canadian Red River Exploring Expedition of 1857' (London, 1860, vol. i., p. 119), says:—

"The unlooked-for short supply of wild rice and fish was more severely felt in consequence of the unaccountable disappearance and death of the rabbits, which are generally found in vast multitudes in the region of the Lake of the Woods and the Winnipeg River. During the spring and summer, large numbers of rabbits were found dead in the woods, owing probably to the exhaustion which followed a severe winter, prolonged this year [1857] to an unprecedented length in these regions."

Speaking of the country on the bank of the Assiniboine, west of Portage-la-Prairie, he says (vol. i. p. 284):—"Everywhere Rabbits were numerous, and considerable areas occur covered with dead willows and aspens, barked by these animals in the winter about two feet six inches above the ground." Hind also relates (vol. ii. p. 52) that, when near the Riding Mountain, his men "dispersed to hunt Rabbits; a dozen were killed within a few minutes, skinned and placed on sticks before the fire to roast."

Archbishop Taché, in his 'Esquisse sur le Nord-Ouest de l'Amérique' (Montreal, 1869, p. 112), says:—

"The American hare abounds periodically throughout the whole extent of the 'Northern Department.' It is sometimes found there in prodigious numbers; but it is a singular fact enough that it disappears almost completely from time to time; and, after these almost complete disappearances, it increases again, growing in number for a period of three or four years; then there is abundance during the same space of time; afterwards a fresh disappearance. This period is so regular that one knows with tolerable certainty in advance when they will be numerous and when they will not. Their number in years of abundance is something fabulous. It does not need a good hunter to shoot a hundred in a day, and a good old woman, accustomed to snaring, usually exceeded this number. I have heard of twenty-five thousand killed during one winter at one single post of the [Hudson's Bay] Company."

The Hon. Dr. Schultz, in a speech before the Canadian Senate on the subject of the resources of the Mackenzie River Basin, on

March 27th, 1888, said, " Rabbits are a source of food-supply in all the forest districts, and indeed throughout the whole region, but die off periodically, as is the case further to the south and west."

Mr. F. Oliver, long resident at Edmonton, on the North Saskatchewan, says (Report of Debates in Canadian Senate, March 28th, 1888):—

"The Rabbit is, of course, found all over the wooded country of the North-West, and is subject to phenomenal increase and to phenomenal scarcity. Year after year they increase, until the country is fairly overrun with them. The Indians can live well enough in these rich years, for even blind men can kill enough for themselves. The Lynx, which lives on the rabbits, and which the Indians eat (as well as all the meat-eating, fur-bearing animals), increases greatly during rabbit years. Therefore, when the rabbits are numerous, the Indians spend the winter in comparative abundance. Then the rabbits decrease unaccountably—more rapidly than they increase. One great supply of winter food is thus cut off from the Indians themselves, and from the fur-bearing animals as well, which latter soon become scarce, either through migration or death; consequently, when the rabbits are scarce times are doubly hard with the Indians. Sometimes an abundance of deer makes up for the scarcity of rabbits, but occasionally both deer and rabbits are scarce. Then the Indians starve."

Mr. Donald Ross, of the Hudson's Bay Company, writes (*l. c.*), " Rabbits are very numerous at times in the North-West, but they periodically die out, from a disease of the throat."

Dr. J. G. Cooper says of an allied species, *Lepus campestris* (Pacific Railroad Exploration Reports, vol. xii., pt. ii., p. 87), "During our journey east of the Cascade Mountains, we saw scarcely any hares, and the Indians told us that some fatal disease had killed nearly all of them."

Mr. C. Gibbs, writing of the same region, says (*l. c.*, p. 131): "In 1853, we were informed by the Yakima Indians west of the Columbia, that a very fatal disease had recently prevailed among these animals, which had cut them almost all off."

Prof. John Macoun, in his 'Manitoba and the Great North-West' (London, 1883, p. 352), says:—

"Hares, *Lepus americanus*, are abundant in the mixed prairie and poplar forest that extends all the way across from Winnipeg to the Rocky Mountains. Some years the country seems alive with them, while other years scarcely one is to be seen. In 1872, the country in northern British

Columbia was full of them. About the middle of November of that year, a party left Fort Saint James, on Stewart's Lake, for the purpose of having an afternoon's hunting. Over sixty were shot in three hours, and the hunters claimed to be disappointed because they did not kill a hundred. During the month of September, 1875, while ascending the Clear-water River, north of Portage-la-Loche, our provisions ran short, and for some days the men snared almost enough to supply us with food. The evening we reached the Portage we were altogether without eatables, and would have gone to bed without our dinners had not a couple of squaws gone to the wood and brought us, in a few minutes, thirteen very fine hares. That same autumn every little thicket was full of them, but I have not seen a dozen since."

Mr. Ernest E. Thompson, in his 'Mammals of Manitoba' (Winnipeg, 1886, p. 19), writes of *Lepus americanus* that—

"It is said to go on multiplying for six or seven successive years, and then at length an epidemic disease regularly appears and almost exterminates the species. If this be true, there can be but little doubt that 1887 is about the last year of the series of increase, as the rabbits have multiplied to such an extent as to cause uneasiness to many persons, who are aware of the trouble a kindred species has caused in Australia. In the fall of 1886 the woods about Carberry [Manitoba], so abounded with the species that killing them ceased to be a sport. I do not think I exaggerate in saying that during the month of October I could on any one day have killed 100 rabbits with one gun. . . . During the summer the species is much subject to the attacks of the parasite tick, *Ixodes bovis*, numbers of which may often be seen hanging on the throat and neck."

My friend Dr. A. S. Thompson informs me that when at Edmonton, on the North Saskatchewan, in 1886, rabbits were extremely scarce there, but that the year before they had been extraordinarily numerous. During the previous winter (1885-6), they had been so abundant, and had so completely consumed all the available food, that haystacks—built round the houses in the town—had actually to be protected from their ravages, although, as a rule, the animals seldom leave the wooded districts. It was a matter of common talk there, at the time, that Lynxes were also very abnormally abundant; and some trappers, who were out after them at the Athabasca Landing, ninety miles north, were unusually successful, as they obtained something like 1200 lynx-skins in the course of their season's trapping. Dr. Thompson adds that, among the trappers and others then at Edmonton, it was currently believed that both the rabbits and the lynxes came

down together from regions further to the north, the latter pursuing the former, and that they never returned northwards by the way they came (that is, down the *eastern* side of the Rocky Mountains); but that the lynxes, having killed off all the rabbits, crossed the range and returned northwards whence they came, up the *western* side of the mountains. This belief, though certainly baseless, sufficiently indicates the fully-recognised fact of the simultaneous abundance of the two species, and the need of some theory of more than ordinary plausibility to account, firstly, for their extraordinary abundance, and, secondly, for their subsequent simultaneous disappearance.

The following cutting, from the 'Manitoba Free Press,' confirms much that has been already said:—

"This year [1887] an epidemic, which makes its appearance periodically, is playing havoc with the wild rabbits of Manitoba. It is reported that the dead animals are to be found lying in groups in their favourite haunts in the bush. There is a strange feature connected with the epidemic which afflicts them. When the rabbits become very numerous, the disease makes its appearance, and soon the dead out-number the living. Indeed, in the following year, scarcely a rabbit is to be found where before they were very numerous. Then their numbers gradually increase until, at the end of seven years' time, they swarm again as before the plague visited them. The epidemic does not seem to extend its influence over the whole North-West in the same year, but breaks out in different localities in successive seasons. In each case, however, it appears from the evidence on hand, that the seven years' cycle in each locality is fairly well defined. The symptoms of the attack are about as follows:—the animal's throat swells, diarrhoea sets in, and death follows."

Messrs. Coues and Allen, in their 'Monograph of the Rodentia of the United States' (U. S. Geological Survey Reports, 1877, p. 371), remark that similar epidemics have been observed among rodents, other than rabbits. Of the latter, one of the authors writes:—

"Their decrease results usually from some not very obvious cause, though sometimes supposed to be connected with a series of unusually severe winters. That this is not the sole cause of their decrease, I have been for a long time convinced; but that it is due more to some prevalent epidemic. Evidence of this is not generally easily obtainable, but proof of it in other cases is quite abundant. In the case of the little Wood Hare, *Lepus sylvaticus*, I have repeatedly met with their dead bodies in the woods

and thickets, bearing no mark of a violent death, and have noted the scarcity of this animal during the years immediately following. . . . I find also recorded in my notes a remarkable decrease, some years since, of the large Long-eared Hares, *L. callotis* var. *texianus* and *L. campestris*, in the Great Salt Lake Valley, This decrease was also accompanied by the finding of great numbers of the animals dead on the sage-brush plains about the Lake, showing no signs of a violent death, . . . leading to the conclusion that their death was due to an epidemic. So abundant had these species been for several years prior to 1869 and 1870 that some of the Mormon residents were accustomed to shoot them merely to feed their swine; while so scarce had they become in 1871, that it was with difficulty I could obtain any specimens."

I will conclude the evidence as to the prevalence of the epidemic by stating my own experience.

During the summer of 1883, I spent several weeks in the town of Carberry, about 105 miles west of Winnipeg, without seeing more than one solitary rabbit. In the summer of 1884, I was again in Canada, and spent several weeks at Carberry. At this time rabbits had become slightly more numerous, though still far from common. Yet this was the same Carberry of which Mr. E. Thompson writes, "In the fall of 1886 the woods about Carberry so abounded with rabbits that killing them ceased to be a sport." I was not at Carberry during 1886, but in the middle of April in the following year I had occasion to pass westward along the line of the Canadian Pacific Railway. I had no opportunity of alighting from the "cars," but was able, nevertheless, to gather most conclusive evidence that the extraordinary abundance of rabbits in the previous year had then been put an end to by the breaking out of the disease. On the sides of the line as it runs through the wooded country between Portage-la-Prairie and Carberry, a distance of about fifty miles, the dead bodies of the rabbits lay literally in hundreds, if not thousands. In some spots several bodies were to be seen lying near one another; and over considerable distances a dried, fluffy, white rabbit's body might be seen every few yards as the train rushed along, lying on the edge of, or close to, the line.

Much more evidence could be adduced in support of the periodic extermination of these unfortunate rabbits by means of some naturally-produced, though virulent, epidemic disease, but enough has been advanced to establish the fact beyond a doubt. It now remains, therefore, to enquire the exact nature of the

disease, and the probability of its being successfully introduced into Australia.

One word, however, first as to the extent of the great rabbit-plague in Australasia.

About 1867, it is said, a Mr. Robinson turned out thirteen wild rabbits on his run; by June, 1870, he had spent £7000 trying to get rid of them. In one day, a party of gentlemen shot no less than 2400.

Mr. C. G. N. Lockhart, a competent authority, and an old colonial, writes in 'Blackwood's Magazine' for December, 1887:—

"The destruction of rabbits should be looked upon as a paramount duty of most urgent necessity. It has, in plain words, come to this:—that rabbits must be utterly subdued in New South Wales, or the colonists must once more withdraw themselves into the county of Cumberland, and there quietly await the wearing out of the pest. That time will arrive. When all vegetation has been utterly destroyed, the rabbits must lay themselves down and die. . . . On the arid, barren Riverina plains (whereon naturally not even a mouse could exist) there are pastured at present some twenty or twenty-five millions of high class merino sheep (a thing which has been made possible by means of the artificial storage of water). These sheep are being gradually eaten out by rabbits. In spite of all endeavours to the contrary, these said rabbits are gradually increasing in numbers. . . . On the south bank of the River Murray, consequently in the colony of Victoria, there is a 'station' named Kulkyne, which has about twenty miles frontage to that river. The holding extends far back into arid, naturally worthless, waterless country. On that station, by skilful management and by command of capital, there came to be pastured about 110,000 sheep. When I, two or three years ago, visited that station, I found that the stock depasturing it had shrunk to 1200 sheep, dying in a paddock at the homestead. The rabbits had to account for the deficiency. . . . On that station they had eaten up and destroyed all the grass and herbage; they had barked all the edible shrubs and bushes; and had latterly themselves begun to perish in thousands."

It was recently announced in the Legislative Council of New South Wales, by the Hon. J. Salamon, that up to the year 1883 only, 7,853,787 rabbits had been destroyed in the colony, at a cost to Government of £361,492. Adding to this sum a fair proportion of the bonuses paid in addition by stock-breeders, farmers, and others, each rabbit killed is estimated to have cost on an average about 1s. 3d. In other words, it cost as much, or more, to kill a wild rabbit in Australia as it does to buy one in

England! As long ago as 1881, too, it was officially stated in a Government Report that during the years 1878, 1879, and 1880, no less than the enormous total of 16,866,485 rabbit-skins, valued at £147,195, were exported from the colony of New Zealand alone.

It is now more than ten years since the colonists became really and seriously alarmed at the increase of the rabbits. The magnitude to which the evil has grown may be inferred from the fact that, notwithstanding the expenditure of vast sums of money, both by Government and by private persons, the number of the rabbits and the area occupied by them have increased enormously. Under these circumstances, it may well be imagined that no economic question in which the Australasian Colonies are interested is likely, for some time, to approach in importance the Rabbit Question.

It is not difficult to see how the extraordinary increase of rabbits in Australia has come about. The fecundity of all rodents is well known; in addition, the Australian climate favours a never-ending breeding season. From their natural enemies, too,—foxes, dogs, stoats, weasels, and the like,—Australian rabbits are practically exempt. It may almost be said that they are equally exempt from persecution by man, notwithstanding the prodigious exertions which have been made to destroy them; for, in a country where the population is not more than about one person to the square mile, the most active and persistent slaughter that can be carried on will, in its effects, fall far short of that accomplished by the most casual shooting, for purposes of sport, in a country like England, where the population averages 446 to the square mile.

The magnitude of the scourge is now, however, so well known in this country that it is unnecessary to say more. The Government of New South Wales would hardly have offered the splendid reward of £25,000 for an effective method of exterminating rabbits, except in a case of the very direst necessity.

The subject of the introduction of what may appropriately be called "rabbit cholera" into Australasia gained additional interest from M. Pasteur's proposals to exterminate the rabbits there by communicating to them the disease known as "fowl-cholera." Fowl-cholera is described, in Prof. Woodroffe Hill's 'Diseases of Poultry' (London, 1886, p. 27), as "an epidemic diarrhoea, chiefly produced by an exalted temperature, defective regime or hygiene in the poultry-yard, and the contaminating

influence of choleraic discharges, decomposing animal and vegetable matters, impure water, and low, damp situations. . . . It affects, more or less, all kinds of birds Neither age nor sex have any influence, apparently, in its production, frequency, or severity. . . . It is rapid in its invasion and course, and its duration may vary from a few hours to two or three days." The chief symptoms are listlessness, cramp, loss of appetite, excessive diarrhœa, laboured breathing, ruffled plumage, disinclination to move, and convulsions, which become more marked until death supervenes. As regards treatment, nothing effectual is known. Diarrhœa is present throughout.

In 'Poultry' (1883, pp. 70 and 84), appears a translation of some remarks on fowl-cholera contributed to 'Le Poussin' by Mons. Jouin, who says:—

"When once it breaks out, the disease causes the most terrible ravages in the shortest time—often in spite of the separation, as far as practicable, of the healthy and ailing birds. It exactly resembles an infectious fever in the way it comes out and develops. It is in the highest degree virulent, for it is only necessary to take the smallest drop of blood from a diseased chicken and to insert it into the body of a healthy one, and in a few hours death will supervene, accompanied by all the symptoms just described. In spite, too, of its appellation, the complaint is not entirely confined to Gallinaceous birds; inoculation will produce it in the rabbit, the dog, and even the horse, according to the experience of MM. Renault and Raynal. . . . There are some animals which cannot be affected with it by inoculation. If, for example, a pig be inoculated, the animal's health will not in any way be affected thereby."

This, then, is the kind of disease which it was proposed to spread broadcast over the thriving "island continent"—a loathsome and pestilential epidemic, which when it breaks out "causes the most terrible ravages in the shortest time"; which "affects more or less all kinds of birds and various mammals"; which varies in its duration in individual cases "from a few hours to two or three days"; and for the treatment of which "no effectual curative measures are known." One may well pause before disseminating wholesale over a vast country such a frightful and uncontrollable complaint. It is little wonder that the Australians hesitated before allowing M. Pasteur's representative to test the proposed remedy.

With rabbit-cholera, however, the case is entirely different. Its existence in Canada has been known for many years, but no

one has ever yet asserted that it attacks any animals except rabbits. True, little or nothing is definitely known as to its nature, even among the highest scientific authorities; but there can be no question that scientific research would show it to be an infectious epidemic, spreading by means of bacilli, and that these bacilli would prove fully capable of being transported to our Australasian colonies and there propagated. It is also true that the Canadian and the Anglo-Australasian rabbits are not specifically identical; but it has been shown that even in America the disease is not confined to one species, while there are reasons for believing that some very similar disease has occasionally appeared amongst our English rabbits, for Daniel, in his well-known work, 'Rural Sports' (vol. i. p. 348), says:—

"Warren farmers are sometimes liable to great disorders from an epidemic disorder among the rabbits. The spring and summer of 1798 were so favourable to the breeding of the rabbits that the warrens in all parts were supposed to have never been more plentifully stocked, but great numbers of the young ones perished by a disorder, supposed to be produced by the continued wet in the autumn. It was infectious, and the first symptom was a swelling in the glands of the neck. The rot ensued and death soon followed."

It is, however, imperative that very precise and exhaustive experiments as to the nature of rabbit-cholera should precede any attempt to exterminate the Australasian rabbits by its aid. It will, in the first place, be necessary to show that it is fatal to *Lepus cuniculus*. In the second place, it is essential to ascertain what other animals (both wild and domestic), if any, are affected by it. In the event of it being shown to affect any domestic animals, its value will be at once destroyed as a remedy for the rabbit-pest; but, in the absence of any definite information under this head, we are tolerably safe in assuming that rabbit-cholera will not attack domestic animals. All such questions, as regards mouse-typhus, were investigated by Professor Löffler, in that exhaustive manner which marks the work of the Teutonic man of science, before any attempt was made to put practically to the test the value of the disease as a remedy for the plague of voles.

This done, it will only remain to put rabbit-cholera to a practical test in a manner more or less similar to that adopted by Prof. Löffler with his "mouse-typhus"; and it will, I think, be admitted that, with our present knowledge of the nature of rabbit-

cholera, there seem no reasonable grounds for doubting that its effects upon the rabbits would be the same as that of mouse-typhus was upon the voles. It is seldom that the theories of the scientist, when put practically to the test on a large scale, have proved so startlingly successful as those of Prof. Löffler are reported to have done when put into actual practice in Thessaly.

I may explain that, some years ago, I laid all the details of my scheme (as herein explained) before the Government of New South Wales, and made formal application for the reward already alluded to. In the end, however, I was officially informed that the Royal Commissioners appointed to inquire into the various methods proposed for checking or suppressing the Rabbit Pest in the Australian Colonies had "decided that no scheme has been propounded for the destruction of rabbits which complies with the Proclamation made by the Government of New South Wales." On what grounds the Commissioners arrived at this conclusion was never explained to me; and, seeing that I was never invited to put my scheme practically to the test, it is hard to see how they could have had any adequate grounds for their conclusion. The offer has now been withdrawn.

With regard to my application, however, it was somewhat gratifying to find that, in the Final Report of the Royal Commissioners, issued in 1889, my scheme received more attention, and was noticed at greater length, than any other scheme of the 1400 submitted. The only objection the Commissioners were able to advance against the scheme was to the effect that, "when the rabbits have been decimated in this manner, a few years only elapse before their numbers are as large as ever." To this it might be replied that, if the colonists were in search of a means capable of exterminating the very last rabbit in Australia and of preventing the recurrence of the plague for ever afterwards, they were in search of something they were hardly likely to find. Surely they might have been satisfied if they could secure a means which, when the rabbits, in the natural course of their increase, became so numerous as to become a plague, appeared capable of all but exterminating them.

In conclusion, I desire to explain that I write from the theoretical standpoint mainly. All things considered, however, it seems that the question of introducing rabbit-cholera among the Australasian rabbits is worthy of fuller consideration.

ON THE MIGRATION OF THE YELLOW WAGTAIL.

BY JOHN CORDEAUX.

THE geographical distribution of this species is very remarkable. Mr. Seebohm (Brit. Birds, vol. ii. p. 213) has described our English Yellow Wagtail, *Motacilla raii*, as an Eastern form, its true home the basin of the Caspian, and the restricted colony in the British Islands as comparatively small and isolated,—the two being separated by the breadth of Europe,—the summer range of the Blue-headed Wagtail, *M. flava*, so nearly allied to our own bird.

Mr. Howard Saunders (Manual Brit. Birds, p. 121) says, "Although the Yellow Wagtail has been obtained as a straggler on Heligoland, Borkum, and the coast of Holland, it is only westward of Belgium that it is known as a regular migrant, and the Blue-headed Wagtail is still the prevailing species in the breeding season as far as Dieppe, west of which our Yellow Wagtail is said to predominate."

It is recorded as breeding plentifully in North-west France, and especially in the neighbourhood of Dieppe; it undoubtedly occurs in localities in Western Europe as a summer resident, nesting locally in Belgium. It has twice nested on Heligoland, where it occurs in limited numbers on migration from the third week in April to the middle of May ('Die Vogelwarte Heligoland'). How far its range may overlap in western and central Europe with that of *M. flava* is uncertain and not very clearly defined.

In Ireland it is a summer visitor in small numbers, and very local, but known to nest in two localities near Loch Neagh, and also near Dublin (A. G. More, 'List of Irish Birds,' 1885). A nest also was found by Lord Lilford on the western shores of Loch Corrib in 1853.

In the autumn it occurs regularly on passage through France and Spain, but more especially along the coast of Portugal. Colonel Irby ('Ornithology of the Straits of Gibraltar,' p. 110) says he has never met the English form of the Yellow Wagtail on either sides of the Straits. Since this was written, however, he has seen specimens collected near Tangiers, also near Malaga ('The Ibis,' 1879, p. 344). Mr. W. C. Tait ("Birds of Portugal,"

in 'The Ibis,' 1887, p. 187) has recorded it as occurring annually on migration near the coast of Portugal from the middle of September to end of October, but it does not appear to use this route on the return journey in the spring, probably then passing northward by the east coast of Spain, and its abundance at that season at Valencia and Malaga seems to confirm the supposition.

Admitting the general correctness of the geographical distribution of the Yellow Wagtail as defined by modern ornithologists, an interesting problem arises as to the summer quarters of those great numbers of *M. raii* which in the autumn arrive on the east coast of England, presumably from the Continent by an east to west route. The movement is regular and normal, and frequently on a great scale, as the following selected notes will show:—

1885. At the Spurn, August 23rd; thousands, "the whole district ablaze with them." 24th; less numbers (Migration Report 1885, p. 43).

1889. Sept. 5th, 9th, 13th, on Lincolnshire coast; swarming.

1892. Sept. 13th, Lincolnshire coast; very heavy immigration, continuous all day, flocks, five to fifty, both adult and young, coming in across sea from east (G. H. Caton Haigh, *in litt.*, Sept., ix., 1892).

It would appear that either *M. raii* is much more numerous in those districts forming the western portion of Central Europe than is generally supposed, or that these great unmixed autumn flights come to our shores from regions more distant than the western fringe of Europe. It is curious that in their autumn wanderings they do not bring across with them any of the blue-headed birds, *M. flava*. So far we have failed to detect this species in the Humber district, although often carefully looked for. The difference in the time of migration of the two species must be considered in this relationship, for on the Continent *M. flava* is later in arriving by a month, and also earlier in departure than the English bird.

Ages ago, before the birth of the historic period, when the pioneers of our Yellow Wagtails, pushing forward like a wedge from the south, had appeared in that part of the western mainland of Europe now distinguished as Great Britain, it is probable, judging from the present known scarcity of the species in Ireland,

that that country had already become separated from the mainland. Eastward, however, their range could have no restriction, and doubtless covered all those great lost fenlands and low country formerly uniting England with the continent, including lands also now parts of Belgium and Holland, which we may reasonably suppose were then, as at the present day, locally frequented by them in summer.

During and subsequent to the invasion of the intruding waters from the north, Yellow Wagtails, in the vernal migration, would pass by the east coast of Spain and along the valleys of the Rhone and Seine to the shores of the newly-formed sea, the main body crossing to England, and a narrow stream also following the western shores of the continent to the limit of their range. In the autumn the English Yellow Wagtails, then as now, passed directly south to Africa by the west coast of Europe, and those of the species nesting on the continent may have used the same route—an ancient bird-path which their ancestors had followed for ages—and to reach which they now had to cross a great sea covering no inconsiderable portion of their former summer quarters—an a land passage now turned into a water passage. A route most circuitous when compared with the obviously more direct and shorter migratory lines followed by *M. flava*.

It seems, then, highly probable that this apparently devious and erratic course now followed by *M. raii* to the east coast of England in the autumn, may be the survival of some very ancient bird-line, still persisted in, although perhaps the necessities, or special causes, which first induced its use may be in abeyance or altogether become obsolete. Undoubtedly these bright little autumn wanderers are, in their own way, telling some very old story, and it remains to ornithologists to try and interpret it.

In conclusion, we think there is sufficient evidence that large numbers of our English Yellow Wagtails cross from the Continent in the autumn to migrate across England and following a south-westerly line.

ON THE RECENT OCCURRENCE IN THE BRITISH
ISLANDS OF THE RUDDY SHELDRAKE.

By F. MENTEITH OGILVIE, M.A., F.Z.S.

PERHAPS the most remarkable ornithological event of the present year has been the appearance of Ruddy Sheldrakes, *Tadorna casarca*, on various parts of the British coast, in comparatively speaking large numbers. Between the 20th of June and the middle of September not less than sixteen specimens were obtained. Of these, Ireland claims eight, Scotland two, and England six. The actual number of Ruddy Sheldrakes that visited the country it is difficult even to guess at, owing to the same flock being recorded from several different localities; but it must have been considerable, and quite unprecedented in the annals of British Ornithology.

The position which the Ruddy Sheldrake holds in the British list has been frequently challenged by naturalists, and there can be but small doubt that a certain proportion of the specimens previously recorded were unpinioned birds that had escaped from private waters—an observation which particularly applies to those taken in the depth of a hard winter, at which season there is little possibility of a wild Ruddy Sheldrake appearing on our coast, and every probability of a frozen-out tame bird being forced to shift its quarters. But the Sheldrakes recently recorded stand on a very different footing, and the points in favour of their being genuine wild birds are so strong that even the most sceptical will, I hope, be convinced by the evidence.

In the following pages I have endeavoured to bring together all the published occurrences, most of which have already been communicated to 'The Field' or 'The Zoologist'; but I have now been enabled, by the kindness of several correspondents, to add dates and other particulars that were previously wanting. After some hesitation I decided to divide the list into two parts: (1) The Irish Sheldrakes, to which are added those from the Solway district; (2) The Scotch and English (E. coast) Sheldrakes. This division may be, and probably is, an entirely artificial one, but seems more convenient for reference than taking the records

in chronological sequence and writing them down in one unbroken list.

The period embraced by these notes extends from the middle of June to the middle of September. It will be seen that the last ten days of June and first week in July was the time during which most of the birds were noted : towards the end of August and in September the specimens obtained were generally solitary birds, the flocks having by this date left our shores, or been exterminated.

IRELAND.

June 24th (or 25th). A flock of "about 20" near Adara, Co. Donegal. One (female) shot. On being shot at, the birds flew over the sand-hills and out to sea ; three returned following morning, and stayed for ten days ; the larger portion of the flock were not seen again after they had been once shot at. (J. Steele Elliott, 'Zoologist,' Aug. p. 311, and *in litt.*)

June 26th. A wounded bird came ashore at Skerries, Co. Dublin (female). A flock of seven were seen in the same neighbourhood at (or about) this time ; two others were shot, but "allowed to go to the bad." The man who obtained the wounded Sheldrake reported "A good many more birds of the same kind seen on some islands that lie about a mile from the shore." ('Field,' Aug. 20, 1892 ; E. Williams *in litt.*)

July 7th. One shot near Drogheda, at the mouth of the River Boyne (female) ('Field,' Aug. 20, 1892 ; E. Williams *in litt.*)

July 7th. One shot out of a flock of six, between Limerick and Foynes (female). Flock reported as very shy and difficult of approach. (E. Williams *in litt.*)

Aug. 4th. Three seen at a distance of about 70 yards, Ballyshannon, Co. Donegal. (W. A. Hamilton, 'Field,' Aug. 20, 1892.)

Aug. 18th. One shot out of a flock of six, near Inch, Co. Donegal ("a young male"). (D. C. Campbell, 'Field,' Aug. 27, 1892.)

Sept. 8th. One shot at Inch, Co. Donegal : bird reported as very wild ; sex — ? (Capt. R. W. Thompson, 'Field,' Sept. 19, 1892.)

ENGLAND, N.W. COAST (SOLWAY DISTRICT).

July 17th. Two seen, River Wampool, Cumberland. One shot and thrown away on a manure-heap ; ultimately rescued in
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more or less decayed condition, by the Rev. H. A. Macpherson. (Rev. H. A. Macpherson, 'Field,' Aug. 27, 1892, and *in litt.*)

[Since these lines were written, Mr. L. Sawray Cookson, of Broughton Tower, Lancashire, has reported ('Field,' 22nd Oct. 1892) that on Sept. 26th, when staying at Crofton Hall, near Wigton, Cumberland, he shot a male Ruddy Sheldrake on the large pond in the park.]

ENGLAND AND SCOTLAND, N., N.E. AND E. COASTS.

June 20th. A flock of five, one shot, Durness, Sutherlandshire. These Sheldrakes were reported as "not difficult to stalk." The specimen obtained was very slightly wounded, and an endeavour was made to keep the bird alive. For some ten days it seemed likely the experiment would prove successful, but the Sheldrake then began to pine, and died about July 13th. "In the course of the fortnight after June 20th" three flocks were seen by the observer, who had obtained the above-mentioned Ruddy Sheldrake. The three flocks appeared to keep separate: one consisted of fourteen birds, one of ten, and one of four (*i. e.* the remainder of the first flock). At the beginning of July they disappeared from the neighbourhood. (Rev. W. C. M. Grant and T. E. Buckley *in litt.*)

July 5th. A flock of eight: one (male) shot, two more injured. Thorpe Mere, Suffolk. These Sheldrakes were seen, by a most competent observer, coming in from the sea. When first noticed they were over a mile out, and flying at a considerable height (100—150 yards). They appeared to be steering due N.W., and "made" the land about half a mile north of Aldeburgh, still keeping the same elevation. On seeing Thorpe Mere, however, the flock began to lower, and, after circling round a few times, finally settled on a wet marsh, and began to feed. Having examined them with a glass, and being unable to identify them, the individual in question punted after them, and, getting three together, shot, gathering one and wounding two others. The whole flock, including the two wounded birds, rose and went off in a direction due N. or N. by E. One or other of the wounded ones returned the following day, and remained about the Mere for some weeks, but so wild as to be absolutely unapproachable either by stalking or punting. The remainder of the flock (five) were not seen again in the district. (F. M. O.)

July 6th. A flock of five:* one (female) shot. Mouth of the River Findhorn, Elginshire. The remainder of the flock appeared to have stayed in the neighbourhood till towards the close of July, but had all left by August 1st. ('Field,' Aug. 6, 1892, and James Brown *in litt.*)

Aug. 3rd. Single bird (female) shot at the evening "fighting" (about 9 p.m.). Thorpe Mere, Suffolk. (F. M. O.)

Aug. 8th. Single bird (male) shot. Thorpe Mere, Suffolk. A wounded bird and very wild; was ultimately secured by a well-organised drive. (F. M. O.)

(I have little doubt that these last two birds recorded from Thorpe Mere were the two wounded on July 5th.)

Sept. 1st. Single bird shot on Humberstone "fitties," Lincolnshire, "apparently in immature plumage, and probably a female." (C. H. Caton Haigh, 'Zoologist,' p. 360.)

Sept. 13th. One (male) picked up dead on Snettisham Beach, Norfolk. (J. H. Gurney *in litt.*, and 'Field,' Sept. 24, 1892.)

("Last month two Ruddy Sheldrakes, or birds supposed to be such, were seen on Holkham Lake, which is not very far from Snettisham." J. H. Gurney *in litt.*, Sept. 19, 1892.)

A few general remarks on the distribution of the Sheldrakes during their stay in this county may not be out of place here. As regards Ireland, the Co. Donegal flock of "about twenty,"—supposing, as seems probable, they were the source from which most of Irish records spring, must have crossed overland,—or coasted round to the east side of the island, some appearing at Skerries, Co. Dublin, on the 26th of June,—that is, one or two days after they had been observed in Co. Donegal. A flock of seven were reported "between Limerick and Foynes," on or about July 7th, but, with this one exception, none seem to have been observed on the S., S.E. or S.W. of Ireland, the head-quarters apparently being the N. and N.W. Whether the Solway birds (two) were of Irish origin is of course merely conjectural, though it would seem not unlikely that this was the case. At any rate they were the only birds recorded from the W. coast of England and Scotland. Of the Scotch birds those seen at Durness,

* The number of this flock is given in 'The Field' as "six or eight," but Mr. Brown writes "... also by careful inquiry I find five was the number of the flock of Ruddy Sheldrakes that appeared on the River Findhorn."

Sutherlandshire, June 20th, were the earliest observed in Great Britain, and they appear to have stayed in the neighbourhood until the first week in July; so that, if this statement is correct, they must have been entirely distinct from the Irish birds.

The Suffolk flock of eight comes next on the list, July 5th, and it is a curious fact that a flock of five were seen in Elginshire on the following day, suggesting, as it does, that the Suffolk birds might have coasted north without resting till they reached the mouth of the Findhorn. Be this as it may, I could not learn, after making careful inquiries, that any Sheldrakes were seen at this time in Norfolk (J. H. Gurney), Lincolnshire (J. Cordeaux), or Yorkshire (J. Cordeaux, T. H. Nelson). On the other hand, it is quite possible that the Findhorn birds may have been a part of those previously seen in Sutherlandshire; but it is rather remarkable that the Suffolk flock, consisting of five uninjured birds, should have disappeared as entirely as they did.

The only other English records are the Lincolnshire and Norfolk specimens, both shot in September, and seeming to indicate that what Sheldrakes were left were then working their way south towards their winter quarters.

The total number of specimens given in this list is sixteen, but three of these were thrown away and destroyed, *viz.*, two birds at Skerries, Co. Dublin, and the Solway specimen. This latter was exhumed, by the energy of the Rev. H. A. Macpherson, from its unsavoury resting-place, and the remains, though useless for preservation, served to identify it beyond question, and give the Ruddy Sheldrake a place in the county fauna. Of the sixteen specimens the sexes were ascertained in ten cases—four males and six females.

It is more than likely that this list is not a complete one. I may have omitted some of the *published* records, despite some care to the contrary; while it is almost certain that all the specimens obtained have not been recorded in print, some being thrown away at the time they were shot, as being in "poor feather" and useless, and others preserved in out-of-the-way farmhouses, and no mention made of them even in the local papers.

It still remains to point out briefly those facts which favour the supposition that these Ruddy Sheldrakes were genuine wild birds. The chief argument against their being wild is the undoubted rarity of this duck in northern Europe, coupled with the

fact that large numbers are kept in semi-confinement in this country, and not unfrequently escape when unpinioned.

In Norway, Sweden, Denmark, and northern Germany, the Ruddy Sheldrake is extremely rare, while Holland, Belgium and France do not appear to have yielded even a single specimen. This rarity is the more surprising seeing how extensive the breeding-range of this duck is, reaching from China and Japan in the East to the extreme South of Spain in the West. In Southern Russia it breeds commonly, extending as far north as lat. 55°, or thereabouts, going southward in autumn, and wintering on the southern and south-eastern shores of the Mediterranean basin.

It is to these Russian birds, in my opinion, that we are indebted for the recent appearance of the Ruddy Sheldrake in Great Britain. Those that visited this country being non-breeders, who probably accompanied the older birds on their northern journey in the spring, were driven away by them from the breeding-grounds, lost their bearings, and, crossing Russia and the North Sea, found themselves landed on our inhospitable shores.

The following are some of the chief reasons for supposing them to be wild:—

(1). Their appearance in large numbers and at approximately the same time (*i. e.* end of June and commencement of July).

(2). Their appearance in widely-separated localities (*e. g.*, Co. Donegal, Sutherlandshire, and Suffolk).

(3). The perfect condition of their flight-feathers. In no case that I could hear of did the primaries show any signs of having been tampered with. One curious point in connection with their plumage, however, was the extremely worn and threadbare condition of the tertials: the various correspondents who were kind enough to give me particulars concerning their specimens all noted this fact. I have often observed in birds that the tertials suffer more than other feathers, and are very shabby just before the moult, but have never seen it so strongly marked as in these Sheldrakes.

(4). Their age: second year (or possibly more).

(5). Their wildness (most observers were agreed on this point).

(6). Their long flights (*e. g.*, the Suffolk flock, which vanished after leaving Thorpe Mere: none were heard of at this time

within 200 miles on either side, yet they could hardly have touched on the Norfolk or Lincolnshire coasts without their being recognised.

(7). In the case of the Suffolk birds the flock was seen coming in from the sea. Of course an escaped flock *might* fly out to sea and return again to land, but the chances are against their doing so.

(8). The entire absence of any records of escapes. This seems a strong point in favour of their being wild. If these birds were escapes they must have escaped in flocks—in one case of twenty, and others of fourteen, ten, and eight. It is hardly possible that great batches of birds like these could leave ornamental waters without the proprietor being aware of the fact. There were perhaps some forty or fifty Ruddy Sheldrakes in Great Britain at the commencement of July, yet not one single Sheldrake, so far, has been publicly notified to have escaped.

(9). The improbability of being suddenly *deluged* with escapes this year, when in former seasons even escaped birds have been anything but common.

(10). The fact that every specimen obtained has been shot on or quite close to the coast, none being recorded from inland waters.

In conclusion, I should like to thank the numerous correspondents, to most of whom I was entirely unknown, who have freely given—often at great length—all the information at their disposal. Without their assistance it would have been impossible to have gathered together these records, and whatever interest this paper may possess is due to their ready and kindly help.

ORNITHOLOGICAL NOTES FROM NORFOLK.

By J. H. GURNEY, F.L.S.

DURING the winter of 1891-92 there was nothing very remarkable to report. Mr. Cole had two Egyptian Geese, and Lord Kimberley saw three Goosanders on his lake, and a Goose which he judged to be a Bean Goose. A young Black Guillemot was picked up alive on the shore at Cromer, and taken to Mr. White, the birdstuffer's, where I saw it. A Sea Eagle frequented Holkham, and was seen by Colonel Feilden and

Mr. Napier, but was not shot, I am happy to say. Three Mute Swans were shot at Ranworth, and Mr. Patterson noted that a great number of Coots were driven from the inland broads to Breydon, which is near the sea.

My diary records that on January 12th, 1892, Mr. Pashley reported a Shag from Cley; and on the 15th a couple of Bitterns were shot at Barton, and one the day before at Somerton—a small bird, and remarkable for the breadth and rufous character of the stripes on its foreneck, which in some specimens are very inconspicuous. On the 16th, a French Partridge, with the whole of the breast and belly white, was shot near Attleborough. My father had one pied in just the same way from the same district (killed in 1873), showing that this peculiarity will crop out from time to time. On the 25th two Eider Ducks were shot at Cley, where two others were killed about the 11th, all females—far commoner than adult males on our coast of Norfolk.

On the 1st of February a Lesser Spotted Woodpecker was found dead at Norwich Hospital, in a glass verandah, where it had apparently gone for warmth and shelter. Hunt speaks of their visiting Rose lane, which is quite in Norwich. The weather was not cold, indeed the day before Sky Larks were rising singing; but this soon changed, and we had wind and hail on the 2nd, and a few days afterwards the weight of snow brought down a silver fir ninety-six feet long and eleven feet in circumference. Ducks were more plentiful than before, and an immense concourse on Holkham Lake was reported by Col. Feilden throughout the month. On the 18th the thermometer fell as low as $9^{\circ}5'$, nearly touching the lowest record of 1891. The day before Mr. Gunn saw seven Tufted Ducks on Ranworth Broad, always a favourite resort of this species, and the 19th he saw a great many Wigeon at Hoveton. A pair of Pintails, *Dafila acuta*, were shot on the 29th at Cley, but though in good plumage they were very small, the female only weighing 1 lb. 5 oz. Several Pintails, as I heard from Mr. Patterson, were seen near Yarmouth, and twelve were afterwards sent me alive from Nacton decoy, near Ipswich; they were in excellent health, and by the end of June had scarcely changed a feather.

There were a few Brent Geese at Cley on March 6th, and about 150 Mallard at Fritton on the 13th, but no Grebes. A Chiff-chaff—first of the summer migrants—was seen by Col. Feilden

on March 24th; and Mr. Southwell heard of a Hoopoe "found dead" at Walcot on April 18th. The parish of Keswick was, as usual, full of Redstarts, and a brood hatched off in a pump. The female appeared to have a white forehead.

A nest of three perfectly white Blackbirds with pink eyes and yellow beaks was found at Harleston, and the finder realised £5 for them. The exact date of this and the next event I do not know. A stack having been thrashed by Mr. Trafford, at Wroxham, which is near Hoveton Gullery, was full of mice, which the Black-headed Gulls soon found out. They came in numbers and made a meal of the mice as they tried to escape, the quick eyes of the Gulls detecting many which but for them would have got away. Some birds of this species, which I used to keep alive, ate toads, leaving their picked skeletons by the pond they came from.

On June 24th an Owl killed a young Pheasant at Northrepps, severed the head from the body and ate most of its back. Next morning it was trapped on the Pheasant, and proved to be a Long-eared Owl. The Pheasant was six weeks old and a well-grown bird, quite two-thirds the size of the Owl, which latter had nothing inside it but the pheasant's feathers, some of which I enclose for your inspection. The Barn Owl, as Mr. Nicholson says (p. 271), is "a true farmer's friend," and very rarely touches game, but I cannot altogether exculpate the Long-eared Owl.

An Eared Grebe, accompanied by some young ones, of which it may or may not have been the parent, was seen at Rockland, on July 28th, by Messrs. E. and W. H. Bidwell (see p. 358). They disappeared into the reeds, and none of them were visible next day on the broad, which is choked with weeds and full of Pike.

Mr. G. Smith reported an immature Two-barred Crossbill at Yarmouth on August 7th. A white variety of the Common Sandpiper was seen on the 18th, at Cley, by Mr. Pashley, who was too near to allow of any mistake, besides being much too familiar with all kinds of Cley birds; but it was not to be seen when I was there the next day. On the 29th a Siberian Pectoral Sandpiper was shot at Breydon, of which full particulars have already appeared (p. 356). The sternum, which was, I believe, sent to Professor Newton, measured 1.1 in.

On September 2nd, a female Grey-headed Wagtail on the beach at Cley. The following day a pied Wheatear was seen at

Cley, and a Scarlet Grosbeak was stated to have been caught alive by birdcatchers at Yarmouth. A young male Ruddy Shelduck was washed ashore, on the 13th, at Snettisham, near Lynn, and there is every reason to regard it as a valid addition to the list of Norfolk birds, though, by a coincidence, Snettisham is the same parish in which an escaped Ruddy Shelduck, belonging to the late Mr. Coldham, was shot in 1869 (see 'Zoologist,' p. 1909). On the 14th I received a young Shoveller and a young Tufted Duck from Saham Mere; the former had a pink breast and bluish wings. The following day a young male Ortolan was shot by Mr. Gunn at Cley, where there were very few birds until the 21st, when large numbers of Redstarts put in an appearance, and a few Blue-throats, speedily followed by a great flight of Robins, with a Wryneck or two. On the 24th Mr. Pashley had a Grasshopper Warbler brought up from the beach, presumably a young male, as its throat was spotted.

The autumnal waves of migration, whether Grallatorial or Insessorial, which pass Cley are very interesting. Some particular species always predominates, and that species, it may generally be predicted, will be comparatively rare the following year, though indeed there are not wanting some instances to the contrary. During the present autumn there have been large numbers of Bar-tailed Godwits at Blakeney and Cley; some of the flocks which passed over were estimated by Mr. Gunn to contain as many as seventy or eighty birds. Mr. Pashley, in sending me fifteen, all apparently immature, and varying much in the purity of the lower part of the back, wrote that he had had so many that he had to throw some away. They will probably not appear in their usual numbers for the next few autumns.

On Sept. 22nd a Lapland Bunting was taken at Saxmundham, and the following day one was shot near Yarmouth. On the 24th flocks of Sandwich Terns were seen at Yarmouth and Blakeney, and several, I fear, were shot. The month closed, as I learn from Mr. Southwell, with the appearance, on the 28th, of a young Roller, *Coracias garrulus*, at Burgh.

NOTES AND QUERIES.

MAMMALIA.

Large Stone in a Horse.—In the stomach of an old horse which I recently had destroyed was found a large round stone, measuring $14\frac{3}{4}$ inches in diameter and weighing 3 lbs. The horse was about 24 years old, and had been in my possession nearly 16 years, during which time he was never unfit for work till about six months since, when he had an obstinate stoppage, probably caused by the displacement of the stone. He completely recovered from it. I do not recollect a case where so large a deposit has been carried so long with impunity.—R. H. RAMSBOTHAM (Beestram, Milnthorpe).

[Is our correspondent quite sure that the stone was in the stomach, and not in the bladder; or, in other words, that it was originally swallowed, and not formed by concretion or gradual urinary deposit? —Ed.].

Polecat in Worcestershire and Staffordshire.—On the 25th October, 1891, a specimen of the Polecat (*Mustela putorius*) was killed on a farm at Smethwick, Staffordshire. As there is no record for this county, or for Worcestershire, in the Editor's article on this animal in 'The Zoologist' for 1891 (pp. 281—294), it may be as well to state that the Polecat is now very rare in the Midlands, and I have never received specimens from any other locality than Smethwick. I have four other specimens in my possession: an old male, a young male, a female, and a young one a few months old. They were all killed about ten years ago, in the district between California, Worcestershire, and Handsworth, Staffordshire. The two counties adjoin here, and a few miles covers both districts, and includes the farm at Smethwick where the last specimen above referred to was killed. This is probably the only stronghold of the Polecat in the district; and I was much surprised at receiving the animal in question so recently, as I considered it banished from our locality. About seven years back, a gardener at Hazlewell Hall, King's Heath, Worcestershire, described a creature to me, which he had seen some years previously, near to a pool in the grounds attached to the Hall; his description was so accurate, that I have no doubt it was a Polecat. He had never seen an animal like it before, and I have not heard of one since, although I have been living near the spot for above eight years. This portion of King's Heath is opposite to the California and Smethwick districts, but with the wide valley of the Rea intervening.—F. COBURN (7, Holloway Head, Birmingham).

Young Squirrels.—With reference to the notes on this subject in 'The Zoologist' for March and September, 1892 (p. 328), there can be no doubt, it seems to me, that Squirrels breed much earlier in the year than stated by Bell and Macgillivray in their respective Histories of British Quadrupeds. In my 'Mammalian Fauna of the Edinburgh District,' published recently, I ventured, on the strength of my own limited experience (I was not then aware of Mr. Blagg's remarks and your editorial note), to question the accuracy of the statements of these authorities, and I am pleased to find that others have had experience similar to mine. In 1890 I knew of a Squirrel's nest containing well-grown young on 23rd April, and several other instances of young in April have come under my notice in previous years. An instance of young being found in a nest in this neighbourhood in the month of August is also known to me. From a dealer in birds and other animals in this city (Mr. Dewar, St. Patrick Square), I learn that he obtains young Squirrels almost every year from the South of England, at the end of March or early in April, and that on the last day of February in the present year, he saw in London three quite small ones being suckled by a cat. I hope other readers of 'The Zoologist' will record their experience on this interesting point.—WILLIAM EVANS (18A, Morningside Park, Edinburgh).

Daubenton's Bat caught with a Trout Fly.—On the evening of the 14th June, 1890, a gentleman, while fishing in Bracebridge Pool, Sutton Coldfield, Warwickshire, with an artificial fly, hooked a Bat, which, on being brought to me, proved to be *Vespertilio daubentonii*. On dissection it proved to be a female, and contained an almost fully developed young one, which appeared to me to be of enormous size when compared with the mother.—F. COBURN (7, Holloway Head, Birmingham).

The Serotine Bat in the Midlands.—After reading your description of the Serotine (*Vesperugo serotinus*) in 'The Zoologist,' 1891 (pp. 201—205), I have little hesitation in stating that one specimen of this bat has passed through my hands. Two or three years back a lady gave me a bat which had been caught near her house, I believe at Harborne, then in Staffordshire, but now the district is included in the city of Birmingham. I was at the time convinced that the bat was new to me, for the upper parts were of a rich dark chestnut-brown, and the lower surface a pretty light gray, a variation in the colouring which I had never before seen in any of our ordinary bats. After skinning it, I put the specimen on one side, with the intention of identifying it, but was exceedingly busy at the time and it was overlooked. It has since disappeared, I know not where, for a recent

search for it has been fruitless. It was decidedly smaller than a Noctule, but it might have been a young specimen. I shall not overlook another if I have the chance to examine one.—F. COBURN (7, Holloway Head, Birmingham).

CETACEA.

Risso's Grampus in the Solway.—On the 24th Sept. last an example of Risso's Grampus (*Grampus griseus*) was taken by Mr. Blake in the Solway, near Annan. This is only the second time that this rare species has been captured in Scottish waters. The previous occurrence was in September, 1889, when some fishermen chased a herd of about ten off Hillswick, in Shetland, and ultimately drove ashore and captured six of them. Sir Wm. Turner subsequently procured four of the crania and two whole carcasses, and has since published pretty full descriptions of their outward and inward anatomy in the 'Proceedings of the Royal Physical Society' and in the 'Journal of Anatomy and Physiology.' In England, Risso's Grampus has been found in the following instances:—One was killed off Puckaster, Isle of Wight, in February, 1843; an adult female 10½ ft. long, taken in a mackerel net near the Eddystone Lighthouse on 28th February, 1870; a month later a young female was exposed in Billingsgate Market, supposed to have been captured in the Channel; a young male was taken alive in the English Channel in July, 1875, near Chichester, and was kept alive for a short time in the Brighton Aquarium; a female on February 3rd, 1886, was taken in a mackerel net about twenty miles south of the Eddystone; and lastly, on September 5th, 1887, one was stranded in the estuary of the river Crouch in Essex, and would have been entirely overlooked had not some of its bones fallen into the hands of Dr. Laver, who submitted them to Professor Flower. Risso's Grampus was originally described by Cuvier, from a specimen obtained at Brest in 1812. Four were stranded at Aiguillon, in La Vendée, in 1822. Large herds were seen in the Mediterranean Sea in 1829 and in 1854, and a specimen was taken at Nice in 1855. Sir William Turner says, in his article in the 'Proceedings of the Royal Physical Society,' that "a customary habitat of Risso's Grampus would seem to be the Mediterranean, in which sea it has been taken as far east as the Adriatic, and as far south as the coast of Algiers and Morocco, whilst Risso stated that it frequented the northern shore about Nice at the pairing season, and Paul Gervais has recorded the presence of a school of these cetaceans in the mouths of the Rhone." Professor Beneden, as quoted by Sir William Turner, gives it a much wider distribution, for specimens, he says, have been captured at the Azores, the Cape of Good Hope, Japan, the North American seaboard, and even New

Zealand. There are four adult skeletons, ten skulls, and some casts of heads and animals in the United States National Collection at Washington. These are all from Cape Cod, where they were obtained in the fall of 1875. But, upon the whole, very little is known of the distribution and habits of this interesting species. Sir William Turner says he ascertained that the Shetland specimens, like some other species of toothed whales, had been feeding on Cuttle-fishes, quantities of the horny beaks and the undigested skins of the latter being found in the stomachs of the Grampuses.—R. SERVICE (Maxwelltown, Dumfries).

[We learn from another source that the lower jaw of the specimen lately captured in the Solway was submitted to Mr. Eagle Clarke, of the Museum of Science and Art, Edinburgh, and to Sir Wm. Turner, both of whom concurred in assigning it to the species named. A second example has since been obtained.—Ed.].

BIRDS.

The Siberian Pectoral Sandpiper in Norfolk.—Referring to my previous communication under the above heading (p. 356), I should be glad to add some remarks upon a very typical specimen of *Tringa acuminata* which has long been in the collection of British birds in the Norwich Museum. I have now verified all the Norfolk-killed examples of *Tringa maculata*, eight in number, with two exceptions, viz., Hoy's bird, killed in 1830, now in the possession of Mrs. Lescher (this has been seen by Mr. Gurney, and a photograph will be found in Babington's 'Birds of Suffolk'), and Mr. Chase's bird, killed in 1887, which that gentleman informs Mr. Gurney is not just now accessible, and find them correctly named; but on referring to the specimen mentioned by Mr. Stevenson, 'Birds of Norfolk,' ii. p. 367, it proves to be, as I have just said, an undoubted example of the Siberian form. The history of this bird is as follows. In the winter of 1848—9, the late Mr. Gurney purchased of a man named Wilmot, for the sum of £5, a Sandpiper which he stated he had killed at Yarmouth in the last week of September, 1848; this transaction Mr. Reeve, the Curator of the Norwich Museum, perfectly recollects, and he informs me that the bird was set up by Mr. Gurney's birdstuffer, Knights. The occurrence is recorded under the heading of "Pectoral Sandpiper" (*Tringa pectoralis*) in 'The Zoologist,' 1849, p. 2392, the communication being dated "Feb. 2, 1849." Subsequently the same man brought to Mr. Gurney two freshly killed specimens of the Red-winged Starling, which, upon enquiry, proved to be of very doubtful origin; and Mr. Gurney was fully convinced that an attempt was being made to deceive him; he, therefore, finding the man to be unworthy of trust, sent a second note to 'The Zoologist,' dated August 14th of the same year, and which will be

found at page 2568 of that magazine, referring to his previous communication, and concluding with the following remark:—"I fear that I was imposed upon with respect to this specimen, and that it is in reality a foreign one. On the 30th March, 1850, Mr. Gurney gave this bird (with others) to the Norwich Museum, instructing Mr. Reeve to place it in the British collection, but without any locality. Everbody who knew Mr. Gurney will be perfectly aware of the extreme caution he exercised in matters of this kind, and will not be surprised at his at once rejecting the bird in question; but I should like to be allowed to state some reasons which have led me to think that in this instance he acted precipitately. (1). *Tringa acuminata*, although described and named by Horsfield in 1820, could not have been a very well-known species to British ornithologists in 1848, and even the Pectoral Sandpiper would have been a most unlikely species for this man to have obtained otherwise than by its accidentally falling to his gun; how much more unlikely, therefore, would it be for him to obtain in any other way an example of the Siberian form. The Red-winged Starling (*Agelaius phoeniceus*), on the contrary, a species frequently imported alive into this country, is by no means an unlikely bird to have been selected for a dishonest purpose, and the circumstance of an example of this bird having actually been obtained in Norfolk in June, 1843, may have suggested the deception. (2). The time of year, too, is in favour of the bird being genuine, for all the Norfolk-killed Pectoral Sandpipers which have since been obtained have occurred (with a single exception) in September or October; the bird in question, an adult in autumn plumage, is therefore appropriate to the season. (3). It seems not improbable that the large sum obtained, honestly it may be, by this man for the sandpiper, may have tempted him to fraud on a subsequent occasion. After carefully weighing the evidence *pro* and *con*, I am of opinion that Mr. Gurney, annoyed at the attempted imposition with regard to the Red-winged Starling, too hastily rejected a genuine Norfolk-killed specimen of the Pectoral Sandpiper. With this opinion Mr. Reeve, who is in a better position to appreciate the circumstances of the case than any other person now living, entirely concurs. It seems highly probable, therefore, if not an absolute certainty, that *Tringa acuminata* has been obtained twice in the county of Norfolk, and that the Norwich Museum possesses the earliest example.—THOMAS SOUTHWELL (Norwich).

Fulmar Petrel on the Irish Coast.—Until June, 1878, the only known breeding haunt of the Fulmar, *Procellaria glacialis*, within the British Isles was in the St. Kilda group of the Hebrides; but in that year some of these birds visited and bred on the island of Foula, one of the Shetlands, having arrived there, it is said, in company with the carcase of a dead whale that drifted ashore. The carcase afforded them ample food for a long time, and finding suitable breeding quarters on the high cliffs,

they took possession, and have since frequented that island as a breeding station every summer. It thus appears what a slight cause will sometimes induce birds to change their breeding haunts. In this instance a sufficient supply of food occurring just at the breeding season in the vicinity of suitable cliffs caused the Fulmars to remain that summer, and probably the young birds which were reared there that season returned the following one, and have now with their own progeny become the regular inhabitants of this Shetland colony. Although breeding on St. Kilda and Foula, the Fulmar very rarely visits the Irish coasts, and then only when driven south by a continuance of northerly gales. A few weakly, half-starved birds have occasionally been cast up dead by the surf on our north-west coast, generally in the months of October and November. Up to the date of the publication of Thompson's 'Birds of Ireland' only three specimens of this bird had been obtained, or at least only that number of which Thompson had any authentic record as Irish. The first obtained was shot by Capt. Hungerford on Inchyderry Island, Clonakilty Bay, Cork, in 1832; a second was shot by the Rev. Joseph Stopford at Castlefreke, also on the south coast of Cork, in October, 1845; and the third was shot on the North Strand, Dublin Bay, on the 1st January, 1846. Such was all that Thompson knew of the occurrence of the Fulmar on the Irish coast; and I have known nothing of its appearance anywhere else until the 24th January, 1857, when I found one lying dead on the Moyview shores, having drifted in with the tide of the night before from Killala Bay. This bird was in such fresh and good condition that I sent it to my old friend the late Dr. J. R. Harvey, of Cork, for his fine collection of native birds. The next occasion of my meeting with this bird was on the 24th October, 1862, when I visited the Enniscrone sands (which face the open bay, separating it from the estuary of the Moy), to search for any storm-driven birds that might be thrown ashore by the surf, from the effects of the northerly gale that had been blowing for two days. As I walked along the edge of the water, I came upon a young and an old Puffin, the latter barely alive, and while examining it, my attention was attracted by a Great Black-backed Gull some distance off, dragging and trying to tear something that was lying partly in the water, and had just been cast ashore by the surf. On reaching the place I found a Fulmar, in a most wretched condition, completely water-soaked, and so weak as not to be able to stand: as it died very shortly after, I put it into my bag. Soon afterwards I saw the Black-back, a couple of hundred yards off, watching some object that had just been cast ashore by the surf, and that he was evidently afraid to attack. Hastening up to the place, I found a second Fulmar just come ashore, and as miserable as the first, except that it was not so weak, being able to stand and walk a little, and deter the gull from attacking it. These two birds, when the sand was washed out of their feathers and the plumage dried, made beautiful specimens, which I

presented to the collection of the Dublin Natural History Society. On the 3rd October, 1865, I found another Fulmar on the same part of the sands, but though quite fresh, it had been destroyed by the gulls before I found it; and on the same date in 1867, I picked up a Fulmar, on the Enniscrone sands, so fresh and uninjured that I sent it to the Royal Dublin Society's Museum. On the 21st October, 1868, I obtained another, which is now in the Belfast Museum; and on the 4th March, 1870, I found the remains of a Fulmar that had been destroyed by gulls on the Bartragh sands. On the 20th November, 1874, I found a fine specimen on the Moyview sands, which I have had set up for myself. Again, on the 30th October, 1878, I found one near Moyview, on the Kinroe shore; and on the 14th October, 1885, I picked up a very fresh and perfect specimen at Enniscrone. The last occasion of my finding a Fulmar was when walking on the Enniscrone sands on the 5th October, 1888. Mr. Edward Williams, of Dame Street, Dublin, in reply to my enquiries, states that, with the exception of those I sent him, he has received only one other specimen of the Fulmar taken in Ireland. This was found, by Mr. Jameson, in May, 1892, on the sands of Bundoran, Co. Donegal.—ROBERT WARREN (Moyview, Ballina, Co. Mayo).

White Wagtail in South Devon.—During the early part of September numbers of White Wagtails frequented the hams at Bantham and Thurlestone, and having recently returned from a tour in Norway, where this was perhaps the commonest bird noticed, I was easily able to identify the species; but to make assurance doubly sure, I secured specimens and forwarded them to a well-known authority on the Birds of Europe, who confirmed the opinion. Hitherto this species has not been identified with the district, but I feel sure this oversight has been from imperfect information and want of knowledge of the distinctive markings of this species as compared with the White Wagtail. The same remark applies to the Tree Sparrow, which, until a specimen was shot a few years ago, was unrecognised in the neighbourhood. Since then, by continuous observation, I have ascertained that the bird is quite a common species, although extremely local, and that in the fall of the year the resident birds are augmented in numbers by arrivals from the continent.—E. A. S. ELLIOT (Kingsbridge, S. Devon).

Reed Warbler in South Devon.—This is another species which must be considered a common breeding bird in more than one locality in S. Devon. Writing on August 14th, my correspondent, Mr. W. V. Toll, who resides close to Slapton Ley, and whose brother owns the upper waters, states in his letter from which I quote:—"Dozens of the Reed Warblers may be seen on the Exe near Countess weir, in the reed bed; also in the Dart quite near Totnes, or rather the island of reeds between the Hempstone

brook and the Dart, where the horses cross at the races, and I suppose here in the Ley, hundreds breed every year. Nests I have found by dozens, built on four reeds generally, but sometimes three, so that in case the water should rise, the nest would float up and down." In a subsequent communication, received a few days later, Mr. Toll states:—"In a small piece of reeds at Torcross, now broken down by Starlings, my brother found several Reed Warblers' nests. He has taken two or three, but they are much damaged; one has eggs, and the bird evidently deserted the nest owing to the Starlings. . . . My brother tells me that the reeds were full of warblers at the end of the Ley. During a dry summer, when we were children, we used to hunt for the warblers' nests, and see who could find a nest on the longest reeds to put in the nursery: we must have taken hundreds of such nests. When I send you the nests and eggs you will be able to see for yourself how beautifully the nests are made of the tops of last year's reeds." I duly received the nests, eggs, and also specimens of the bird. Not the least interesting part of Mr. Toll's communication is the statement that the Starlings disturb the breeding warblers, for the Starlings do not flock to the Ley till August, and this is a late date for the warblers to be sitting.—E. A. S. ELLIOT (Kingsbridge, S. Devon).

Exportation of Larks and Thrushes.—Quite a trade in Larks and Thrushes is carried on between Brighton and Paris, throughout the whole of the winter season, by wholesale netting on the Brighton Downs. From a dozen to twenty hampers full of these birds (averaging about 14 lbs. per hamper) are sent off daily to Paris alone, to say nothing of those which are retained for home consumption.

The Hoopoe in Somersetshire.—On the 7th Sept. last a Hoopoe, *Upupa epops*, was shot in an orchard at Berrow, and was seen, in the flesh, at the local birdstuffer's at Burnham by my friend Mr. Wm. Stodate, who kindly sent me a notice of the occurrence. So far as I know, this is the first authenticated instance of this species having been killed in this county.—H. ST. B. GOLDSMITH (King's Square, Bridgwater).

[The late Mr. Cecil Smith, in his 'Birds of Somersetshire,' included the Hoopoe (p. 259) in these words:—"This is an occasional summer visitant, rare indeed in this county, so much so that I can find no recorded instance of its capture or occurrence." He refers, however, on the next page to one which was "seen at Monkton, near Taunton, during the months of April and May, 1866." He adds, "It was seen several times running about on a dunghill near a farmhouse, and was described as constantly erecting its crest." Besides this peculiarity, he received such an accurate description of the bird that he felt quite sure it could be nothing but the Hoopoe. Mr. Cecil Smith, however, overlooked several instances of the occurrence of this bird in Somersetshire which had been

recorded prior to the publication of his own book in 1869. For instance, about the end of April or beginning of May, 1859, a Hoopoe was shot at Piddy ('The Field,' 7th May, 1859). On the 20th October, 1860, one was shot at Weston-super-Mare, and two years previously one was obtained at the same place ('The Field,' 17th Nov. 1860). On the 10th May, 1862, the late H. Ward, of Vere Street, London, had a Hoopoe which had been sent to him for preservation from Bath. On enquiry, it was ascertained to have been shot on May 1st at Keynsham.—ED.]

Notes from Scarborough.—The weather having been fine, and the wind westerly during the whole of the autumn until October, migrating birds have not appeared in great numbers on this part of the coast. Since August I have noted the occurrence of the following species:—On Aug. 19th, two examples of the Curlew Sandpiper, *Tringa subarquata*, were obtained on the north shore; one of these (an old bird) retained the red breeding plumage to a great extent, the other was an immature bird. On Oct. 21st, an adult Greenshank, *Totanus canescens*, occurred in the same place. Little Stints, *Tringa minuta*, have passed in limited numbers, one being obtained on the north shore on Aug. 29th and another on Aug. 31st; these are the only two examples I have seen this autumn. On Sept. 17th, a male Peregrine Falcon, just completing the moult into adult plumage, was shot whilst chasing a Jackdaw. The bird had frequented some high cliffs, a little to the south of Scarborough, for about six weeks previously. Merlins, *Falco aesalon*, have been somewhat abundant. I have seen several on the coast; one, a handsome male in adult plumage, was shot on Sept. 14th. This bird was discovered breeding, during the past season, on the high moors above Scarborough, the four eggs and the male bird being brought to me for identification. The male was sitting when the nest was discovered, and was shot as he flew off the eggs. On Sept. 21st, I had brought to me an immature male Black Redstart, *Ruticilla titys*, which had been killed with a stone by a little boy near Scarborough. It was considerably lighter in colour than one (a female) which I shot some four years ago. On Oct. 14th, a mature specimen of the Red-necked Phalarope, *Phalaropus hyperboreus*, was shot whilst feeding on the north shore, and brought to me. A strong N.E. gale was blowing at the time. Not having skinned the bird at the time of writing, I am unable definitely to record the sex, but from the size ($7\frac{1}{4}$ inches in length), I should say it is a female. This is the first example I have seen in this district, and I find on reference to Messrs. Clarke and Roebuck's 'Vertebrate Fauna of Yorkshire,' that it is described as "a casual visitant in autumn and winter, of very rare occurrence." It is, however, recorded on two previous occasions at Scarborough; one, mature, in December, 1853, and in November, 1854. The fishermen tell me that the Pomatorhine Skua, *Stercorarius pomatorhinus*, is unusually abundant on the

fishing grounds this autumn. I had three brought to me on Oct. 14th, none of which, however, were in fully mature plumage. Terns of all kinds have been almost totally absent this year, the only specimens I have seen being two immature examples of the Common Tern, *Sterna fluvialis*. Gannets, *Sula bassana*, on the other hand, have been unusually abundant off the coast during the last three weeks. Numbers may be seen fishing in their peculiar manner in the north and south bays. The sea has for some time past been alive with young Whiting, about four or five inches long, and it is probably this unusual supply of food which has tempted the Gannets inshore.—WILLIAM J. CLARKE (44, Huntriss Row, Scarborough).

American Stint in North Devon.—An example of the American Stint, *Tringa minutilla*, making the third occurrence of this species recorded for the British Isles, has been recently obtained here by Mr. W. B. Hawley. It was met with in exactly the same locality as the specimen secured by Mr. Rickards in 1869, but just a month earlier. Mr. Hawley says:—"On the 16th of August last, a Stint rose close to me on the mudflats of the Northam Burrows. It flew with a zigzag flight, but not nearly so impetuously as the Little Stint. It uttered a note very like that of the Little Stint, but less loud. When it had flown about one hundred yards it was joined by a pair of Ringed Plovers, and the three birds then settled. I tried to get close to them, but they rose immediately and flew out of sight. On the 22nd of August, at about 8 a.m., I met with the bird again within a short distance of the place where I had first seen it. It rose silently from a little ditch, and I at once shot it. The irides were dark brown, the bill nearly black, and the legs and toes greenish yellow. It was evidently very fat." Mr. Hawley did not attach any great importance to his specimen at the time, but two or three weeks later, on reading the account of Mr. Rickards's Stint quoted from 'The Zoologist' in 'The Birds of Devon,' it struck him that the bird in question might possibly be an example of the same species. The skin was accordingly sent to the Rev. Murray A. Mathew, who at once vouched for its identity. There were a number of Little Stints on Braunton Burrows about the same date.—H. A. EVANS (Westward Ho, North Devon).

Eared Grebe in Anglesea.—Mr. T. A. Coward states (p. 358) that he saw a Grebe of this species in Anglesea last August, and considers the occurrence unusual. I may state that I have a fairly good knowledge of the birds of this island, and consider *Podiceps nigricollis* a resident. In May last, whilst birdnesting in the vicinity of some small lakes about seven miles from here, a male Grebe of this species, in breeding plumage, flew low overhead. It returned again in about five minutes, and from the nature of the district I had no doubt at the time that the female was sitting somewhere in the neighbourhood. It is usually impossible to reach the

nest without the use of a boat. I have had opportunities of observing the nesting habits of this bird in the North of Ireland. When approached with a boat it would disappear into the water as quietly as a Dabchick. It rarely takes flight at the time, except when hard pressed by a dog. Owing to this circumstance, Grebes in general are considered much rarer than they really are. In the bays and land-locked waters of Anglesea, during winter and early spring, I see the Eared Grebe very frequently. About two years ago, during the month of January, I shot one in mistake for a Mallard. It was moonlight at the time, and the bird was flying with great velocity.—WM. BANKS (Holyhead, Anglesea).

Uncommon Birds in Somersetshire.—I drove recently to Stogursey, a village near the sea, to see a small but interesting collection of local birds, belonging to a wheelwright who has stuffed birds for people in the neighbourhood. Unfortunately he had not kept any memoranda, and so could only give me approximate dates. Among other birds in the collection, I found Baillon's Crake, *Porzana bailloni*, which was brought to him wounded, having been shot about a mile from the village in 1887; a female Crossbill, *Loxia curvirostra*, shot by himself in the village in 1877; Richardson's Skua, *Stercorarius crepidatus*, three specimens, one adult and two young birds, shot at Stolford; Gannet, *Sula bassana*, young, washed ashore at Stolford in 1880; and one or two birds whose occurrence has only been recorded a few times before in Somersetshire. Last winter, a Manx Shearwater, *Puffinus anglorum*, was blown by a storm into the rigging of a vessel at the mouth of the river, and was brought alive into Bridgwater, but died the following night; it was preserved, and is in the collection of Mr. Tucker, of this town.—H. ST. B. GOLDSMITH (King's Square, Bridgwater).

Iceland Gull on Lough Swilly, Co. Donegal.—One of these handsome birds has just appeared on the Lough, with a northerly gale, and has been disporting himself in front of this bay for an hour or two. This is the second I have seen here this autumn. Wigeon have arrived to the upland lakes already in considerable numbers, and the signs of winter are increasing.—H. C. HART (Carrablagh, Port Salon, Letterkenny).

Woodchat in South Devon.—On the 2nd September last, whilst driving in the village of Bantham, situated at the mouth of the river Avon, I noticed a bird of this species flitting from bush to bush in front of me. I quickly got out my gun and secured the stranger, which proved to be a female, in immature plumage. According to the authors of 'The Birds of Devon,' the evidence relating to the recorded instances of this species in Devonshire is not satisfactory.—E. A. S. ELLIOT (Kingsbridge, South Devon).

Yellow-browed Warbler in Lincolnshire.—On Oct. 7th I shot a specimen of the Yellow-browed Warbler, *Phylloscopus superciliosus*, from a hedge near the sea-bank at North Cotes. It flew out of the hedge as I was walking along the bank, and I saw at once, from its quick and even flight and brighter colour, that it was not a Goldcrest. There was a fresh west breeze blowing at the time, and no sign of migration among the smaller birds, which were singularly scarce in the sea-side hedges. Probably this bird had crossed on the previous day, when the wind blew lightly from the east, bringing with it the first Snow Bunting.—G. H. CATON HAIGH (Grainsby Hall, Great Grimsby, Lincolnshire).

Introduction of Ptarmigan into the Færoe Islands.—In 'The Zoologist' for 1890 (p. 392), Mr. J. J. Dalglish referred to Herr H. C. Müller's report that on the 21st of August, 1890, a pair of Ptarmigan were observed (on Kirkeboe Rein) near Thorshavn, with eight or ten young ones nearly ready to fly. So far the experiment appeared to be most successful, and I hoped to hear favourable accounts of increase. I regret to state that such has not been the case, and since 1890 only two Ptarmigan have been met with, *viz.* one shot in 1891 at Huisavick, in Sandoe, another in the same year Tranjisvaag, in the island of Suderoe. These birds must have flown across sea channels from the island of Stromoe, where they were originally turned out, and were killed in ignorance of that fact. In company of friends, I was three weeks in the Færoe Islands last summer, and we visited most of the islands in the group. Many of the higher hills, including the highest Slatteritinde, were ascended by members of our party, a careful look-out was kept for any traces of Ptarmigan, and inquiries were made from all shepherds met with, or those whose avocations took them to the hills, but we could neither see nor hear anything that justified the hope of Ptarmigan being still alive in the Færoes. This result is very disappointing, and it is not easy to understand why *Lagopus rupestris*, introduced from Greenland, and breeding successfully in Færoe two months after introduction in 1890, should apparently have died out. There is quite a sufficiency of suitable food in the Færoes for Ptarmigan; in Grinnell Land *L. rupestris* subsists almost entirely on *Saxatile oppositifolia*, and there is abundance of that plant on the higher hills of Færoe. The damp and comparatively mild climate of the Færoe Islands, very different from the drier and colder climate of Greenland, in winter, may have been the reason for the birds not living, and it would be interesting to see whether an importation on the same scale of the species from Iceland might not prove more successful. It is just possible that some of the Ptarmigan may be

alive and breeding on the summits of the higher hills of Stromoe and Sandoe, which we did not ascend last summer, and which are seldom traversed even by the natives, except when collecting the sheep in autumn; but I am not very sanguine that such can be the case, for the natives are most excellent observers, and the strange flight, to them, of a covey of Ptarmigan would at once arrest attention.—H. W. FEILDEN (Wells, Norfolk).

MOLLUSCA.

Spirula, Ianthina, and Velella at Lough Swilly, Co. Donegal.—On October 2nd, after a spell of stormy weather from the westward, I gathered a number of specimens of *Velella* on the shore below my house. There were also four specimens of *Ianthina rotundata*, with their floats attached, and living, and a number of the pretty little horn-shaped shells of *Spirula australis*. The last named I have never seen here before. *Ianthina* turns up not unfrequently, but very seldom alive. *Velella* (sp.?) I have not seen here for many years. It was interesting to find these three oceanic forms on a small patch of sand, and I have sent specimens of each to the National Museum in Dublin. The *Velella* appeared to be dead, though the shells were perfectly fresh. I take them to be *V. limbosa*, though I could find no trace of the characteristic fringe of tentacles.—H. C. HART (Carrablagh, Port Salon, Letterkenny).

CRUSTACEA.

Pycnogonida from the Sligo Coast.—Miss Warren has kindly sent me the two Pycnogons recorded by Mr. Warren (p. 367) as "Nymphons." One is *Phoxichilus spinosus*, Mont., the other *Phoxichilidium femoratum*, Rathke. Early in the summer I received *Nymphon gallicum*, Hock., from the same locality.—G. H. CARPENTER (Science and Art Museum, Dublin).

SCIENTIFIC SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON.

October 5th, 1892.—HENRY JOHN ELWES, Esq., F.L.S., Vice-President, in the chair.

Mr. W. H. Yondale, F.R.M.S., of Cockermouth, was elected a Fellow.

Mr. C. O. Waterhouse exhibited a specimen of *Latridius nodifer* feeding on a fungus, *Trichosporium roseum*.

The Rev. A. E. Eaton sent for exhibition the male specimen of *Elenchus tenuicornis*, Kirby, taken by him on the 22nd August last, at Stoney Stoke, near Shepton Montague, Somerset, and described by

him in the 'Entomologist's Monthly Magazine,' Oct. 1892, pp. 250—253. Mr. McLachlan stated that another specimen of this species had been caught about the same date in Claygate Lane, near Surbiton, by Mr. Edward Saunders, who discovered that it was parasitic on a homopterous insect of the genus *Liburnia*, and had also described it in the Ent. Mo. Mag., pp. 249—250.

Mr. J. M. Adye exhibited, for Mr. McRae, a large collection of *Colias edusa*, *C. edusa* var. *helice*, and *C. hyale*, all taken in the course of five days' collecting in the neighbourhood of Bournemouth and Christchurch, Hants. There were twenty-six specimens of var. *helice*, some of which were remarkable both in size and colour. He stated that Mr. McRae estimated the proportion of the variety *helice* to the type of the female as one in fifty. Mr. Adye also exhibited two specimens of *Deiopeia pulchella*, recently taken near Christchurch. The Chairman, Mr. Hanbury, Mr. Jenner Weir, and Mr. Merrifield commented on the interesting nature of the exhibition, and on the recent extraordinary abundance of *C. edusa* and the var. *helice*, which was probably not exceeded in 1877.

Mr. Dallas Beeching exhibited four specimens of *Plusia moneta*, lately taken in the neighbourhood of Tunbridge Wells.

Mr. Gervase F. Mathew sent for exhibition two specimens of *Plusia moneta* and their cocoons, which were found at Frinsted, Kent, on the 3rd September last. It was stated that Mr. Mathew had found seven cocoons on the under side of the leaves of monkshood, but that the imago had already emerged from five of them.

Mr. Rye exhibited a specimen of *Zygæna filipendulæ* var. *chrysanthemi*, and two varieties of *Arctia villica*, taken at Lancing, Sussex; also dwarf specimens of *Euchloë cardamines* from Wimbledon; a variety of *Thecla rubi* from Bournemouth; and varieties of *Coccinella ocellata* and *C. oblongoguttata* from Oxshott.

Mr. A. H. Jones exhibited specimens of *Argynnis pales* var. *isis*, and var. *arsilache*, the females of which showed a tendency to melanism, recently taken at Campfer, in the Upper Engadine; also melanic forms of *Erebia melampus*, and a specimen of *Erebia nerine*, taken at Bormio, at the foot of the Stelvio Pass.

Mr. Elwes exhibited specimens of typical *Erebia melas*, taken by himself at Campiglio, in the Western Tyrol, on the 25th July last, at an elevation of 7000 feet; also specimens of the same species from Hungary, Greece, and the Eastern and Central Pyrenees. He stated that the supposed absence of this species from the Alps, which had seemed to be such a curious fact in geographical distribution, had been first disproved by Mrs. Nicholl, who discovered it at Campiglio two years ago. He also exhibited fresh specimens of *Erebia nerine*, taken at Riva, on the lake of Garda, at an elevation of about 500 feet; also specimens of the same species,

taken at the same time, at an elevation of about 5000 feet, in cool forest glades; and remarked that the great difference of elevation and climate did not appear to have produced any appreciable variation in this species. Mr. Elwes also showed a pair of *Dasydia tenebraria* var. *wockearia*, Stgr., from Campiglio, which appeared to him to be sufficiently constant and distinct from the typical form to be treated as a species.

Mr. G. T. Porritt exhibited two fine varieties of *Abraaxas grossulariata*, bred by Mr. George Jackson during the past summer from York larvæ; also, on behalf of Mr. T. Baxter, a curious *Noctua* taken on the sand-hills at St. Anne's-on-Sea on August 20th last, concerning which a difference of opinion existed as to whether it was a melanic form of *Agrotis cursoria* or of *Caradrina cubicularis*; also a small dark form of *Orgyia antiqua*, which had occurred in some numbers at Longridge, near Preston.

Mr. A. Eland Shaw exhibited a specimen of *Mecostethus grossus*, Linn., taken lately at Irstead, in the Norfolk-broad district. He stated that this was the first recorded capture of this species in Britain since 1884.

Mr. C. G. Barrett exhibited a specimen of *Syrichthus alveus*, caught in Norfolk, about the year 1860, by the Rev. J. H. Marsh; a beautiful variety of *Argynnis euphrosyne*, caught this year near Godalming by Mr. O. Latter; and a series of varieties of *Ennomos angularia*, bred from a female taken at Nunhead.

Mr. P. Crowley exhibited a specimen of *Zygæna filipendulæ* var. *chrysanthemi*, taken last August at Riddlesdown, near Croydon, by Mr. Murton Holmes.

Lord Walsingham sent for exhibition several specimens of larvæ of *Sphinx pinastri* and *Aphomia sociella*, preserved by himself, which were intended for presentation to the British Museum. The larvæ of *S. pinastri* had been sent to him by Lord Rendlesham, who obtained them from ova laid by a female which he had captured in Suffolk last August.

Mr. de Nicéville communicated a paper entitled "On the Variation of some Indian Euplæas of the subgenus *Stictoplaea*"; and Captain E. Y. Watson exhibited, on behalf of Mr. de Nicéville, the specimens referred to in this paper. Colonel Swinhoe, Mr. Hampson, Mr. Poulton, and the Chairman took part in the discussion which ensued.

Mr. W. Bateson read a paper entitled "On the Variation in the Colours of Cocoons and Pupæ of Lepidoptera; further Experiments."

Mr. E. B. Poulton read a paper entitled "Further Experiments upon the Colour-relation between certain Lepidoptera and their surroundings."

Miss Lilian J. Gould read a paper entitled "Experiments on the Colour-relation between certain Lepidopterous larvæ and their surroundings, together with Observations on Lepidopterous larvæ." A long discussion ensued, in which Mr. Jenner Weir, Dr. Sharp, Mr. Merrifield, Mr. Poulton, Mr. Tutt, and the Chairman took part.—H. Goss, *Hon. Secretary*.

